

**ABSTRACT OF THE DISCLOSURE**

A method for synchronizing a master clock to a slave clock located in master and slave devices communicating with one another via a laser signal beam and a communications channel, each of the devices including a homodyne detector for determining a respective correlation pattern with respect to a phase tuned local oscillator includes steps for recording master and slave correlation patterns while the signal beam cycles between first and second operating modes, transmitting the master correlation pattern and associated first and second times at which the signal beam shifted between the first and second operating modes and between the second and first operating modes over the communications channel, comparing a portion of the master correlation pattern between the first and second times to the slave correlation pattern to thereby determine the time offset between the master and slave correlation patterns, and applying the time offset to the slave clock. A corresponding clock synchronization system is also described.